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[Title of the Invention]

BELT CONVEYING MECHANISM FOR INK-JET RECOEDING APPARATUS

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[Fee]

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[List of Attached Documents]

[Name of Document] Specification 1

[Name of Document] Drawings 1

[Name of Document] Abstract 1

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[Necessity or not of a proof] Necessity

[Name of Document] Specification

[Title of the Invention] BELT CONVEYING MECHANISM FOR INK-JET RECORDING APPARATUS

[Claims]

[Claim 1]

A belt conveying mechanism for an ink-jet recording apparatus, comprising:

a plurality of rollers;

an endless conveyor belt for conveying a record medium, the conveyor belt wrapped around the plurality of rollers;

a recessed portion formed in an outer surface of the conveyor belt such that ink moves towards side of the conveyor belt in accompaniment with the traveling of the conveyor belt; and

an ink absorbing member for absorbing the ink induced toward the side of the conveyor belt by the recessed portion.

[Claim 2]

The belt conveying mechanism for an ink-jet recording apparatus according to claim 1, wherein a wall of the recessed portion in the rear side of the traveling direction of the belt is shaped like an overhang with its upper portion facing the front of the traveling direction of the belt.

[Claim 3]

The belt conveying mechanism for an ink-jet recording apparatus according to claim 1 or 2, wherein the recessed portion is formed such that the ink moves towards both sides of the conveyor belt.

[Claim 4]

The belt conveying mechanism for an ink-jet recording apparatus according to any one of claims 1 to 3, wherein the ink absorbing member is movable between a position at which it comes into contact with the conveyor belt and a position at which it does not come into contact with the conveyor belt.

[Detailed Description of the Invention]

[0001]

[Technical Field]

The present invention relates to a belt conveying mechanism for use in conveying a record medium in an ink-jet recording apparatus that conducts recording by ejecting ink onto a record medium.

[0002]

[Background Art]

An ink-jet recording apparatus is an apparatus which causes ink ejected from nozzles formed in heads to adhere to paper to thereby form a desired image on the paper. In such an ink-jet recording apparatus, a belt conveying mechanism is sometimes used as a mechanism for conveying the paper serving as a record medium. In a case where the length occupied by the heads in the conveying direction of the paper is long, a relatively short piece of paper cannot be conveyed with a roller conveying mechanism. It is however possible for the belt conveying mechanism to convey such a short piece of paper.

[0003]

In an ink-jet recording apparatus, when the state where ink is not ejected from the nozzles continues for a long period of time, the surfaces of the ink meniscuses dry and poor ink ejection arises. In order to prevent

this, it is necessary to periodically conduct so-called flushing in which the ink is forcibly ejected from the nozzles towards a location other than the paper when printing is not being conducted. In the case of a serial-type ink-jet recording apparatus where the heads reciprocally move in a direction orthogonal to the conveying direction of the paper, flushing can be rapidly conducted by moving the heads to a position offset from the paper conveying path when printing is not being conducted. However, in the case of a line-type ink-jet recording apparatus where the heads are fixedly disposed along the direction orthogonal to the paper conveying direction, for example, when the aforementioned belt conveying mechanism is adopted as the paper conveying mechanism, it is necessary to move a member that catches the ink to a position facing the heads after the belt conveying mechanism or the heads has/have been retracted. Therefore, the configuration becomes complicated, and it is difficult to conduct flushing rapidly.

[0004]

Thus, techniques have been described in Patent Documents 1 and 2 that enable rapid flushing in a line-type ink-jet recording apparatus employing a belt conveying mechanism, in which technique an opening is disposed in a portion of the conveyor belt, and ink is

ejected towards a member disposed below the opening.

[0005]

[Patent Document 1]

Japanese Unexamined Patent Publication No. 2001-287377 (FIGS. 1 and 3)

[Patent Document 2]

Japanese Unexamined Patent Publication No. 2001-113690 (FIGS. 1 and 3)

[0006]

[Problems to be solved]

However, in the above-described technique of the Patent Documents 1 and 2, there is a problem in that the strength of the conveyor belt significantly drops due to the presence of the opening in the conveyor belt. As a result, a desired belt tension cannot be obtained, the paper-conveying function of the conveyor belt drops, and the life of the conveyor belt becomes short.

[0007]

It is therefore an object of the present invention to provide a belt conveying mechanism for an ink-jet recording apparatus that enables rapid flushing in a line-type ink-jet recording apparatus with a relatively simple configuration and that is less susceptible to drop in the strength of a conveyor belt.

[0008]

[Means for solving the Problems]

In order to achieve the above object, there is provided a belt conveying mechanism for an ink-jet recording apparatus, comprising, a plurality of rollers; an endless conveyor belt for conveying a record medium on a surface, the conveyor belt wrapped around the plurality of rollers; a recessed portion formed in an outer surface of the conveyor belt such that ink moves towards side of the conveyor belt in accompaniment with the traveling of the conveyor belt; and an ink absorbing member for absorbing the ink induced toward the side of the conveyor belt by the recessed portion (claim 1).

[0009]

According to the above configuration, rapid flushing becomes possible with a relatively simple configuration by ejecting ink towards the recessed portion without retracting the conveyor belt or the heads . Also, a drop in the strength of the conveyor belt can be reduced because the conveyor belt has no opening formed therein. Further, the ink flushed in the recessed portion can be removed from an outer circumferential face of the belt in accompaniment with the traveling of the belt, effectively.

[0010]

In the present invention, a wall of the recessed portion in the rear side of the traveling direction of the

belt may be shaped like an overhang with its upper portion facing the front of the traveling direction of the belt (claim 2). According to this, there is less events that the flushed ink overflows from the recessed portion.

[0011]

In the present invention, the recessed portion may be formed such that the ink moves towards both sides of the conveyor belt (claim 3). According to this, in comparison with the case where ink moves towards one side of the belt, there is less events that the flushed ink overflows from the recessed portion.

[0012]

In the present invention, the ink absorbing member may be movable between a position at which it comes into contact with the conveyor belt and a position at which it does not come into contact with the conveyor belt (claim 4). According to this, it is possible to restrict the friction between the ink absorbing member and the conveyor belt to the minimum. Also, ink absorbed in the ink absorbing member is prevented from adhering to the conveyor belt, so that belt slipping further hardly occurs.

[0013]

[Embodiments of the Invention]

Hereinafter, very proper embodiments of the present invention will be described with reference to the drawings.

[0014]

Fig. 1 is a schematic view of an ink-jet printer provided with a belt conveying mechanism in accordance with a first embodiment of the invention. An ink-jet printer (ink-jet recording apparatus) 1 of Fig. 1 is a color ink-jet printer provided with four ink-jet heads (recording heads) 2. The ink-jet printer 1 includes a paper feed section 11 on the left in the diagram and a paper discharge section 12 on the right in the diagram.

[0015]

A paper conveying path extending from the paper feed section 11 to the paper discharge section 12 is formed inside the printer 1. A pair of paper feed rollers 5 that grip and carry paper, i.e., an image recording medium, are disposed immediately downstream of the paper feed section 11. Paper serving as a record medium is sent from left to right in the diagram. At an intermediate portion of the paper conveying path are disposed two rollers 6 and 7 and a conveyor belt 8 that is wrapped around the rollers 6 and 7. The outer surface of the conveyor belt 8 is adhesive by silicone rubber. Paper conveyed by the pair of paper feed rollers 5 is retained by adhesion on the conveying surface of the conveyor belt 8 and is conveyed downstream in the conveying direction, i.e., toward the right in the diagram, by the driving force of the roller 6 being

rotated clockwise, i.e., in the direction of arrow A.

[0016]

Press member 9 is disposed at a side of the paper conveying path opposite to the belt roller 6. The press member 9 is for pressing the paper onto the conveying surface of the conveyor belt 8 to ensure that the paper on the conveyor belt 8 does not rise from the conveying surface but that the paper is reliably conveyed on the conveying surface.

[0017]

A peeling mechanism 10 is disposed to the right in the diagram of the conveyor belt 8. The peeling mechanism 10 peels the paper, which is retained by adhesion on the conveying surface of the conveyor belt 8, from the conveying surface, and send the paper towards the paper discharge section 12 on the right.

[0018]

The four ink-jet heads 2 respectively include a head main body 18 (which is composed of a passage unit having ink passages and a pressure chamber, and an actuator unit pressurizing the ink in the pressure chamber adhered each other)at lower ends thereof. Each head main body 18 has a rectangular cross section, and the head main bodies 18 are disposed in mutual proximity so that the longitudinal direction thereof is a direction perpendicular to the

paper conveying direction, i.e., the direction perpendicular to the drawing plane of Fig. 1. In other words, the printer 1 is a line-type printer. A multiplicity of nozzles are disposed in each bottom surface of the four head main bodies 18, and magenta, yellow, cyan and black inks are respectively ejected from the four head main bodies 18.

[0019]

Each head main body 18 is disposed so that a small gap is formed between the lower surface thereof and the conveying surface of the conveyor belt 8, and the paper conveying path is formed in this gap. Thus, when the paper conveyed by the conveyor belt 8 successively passes directly below the four head main bodies 18, the inks of the respective colors are ejected from the nozzles towards the upper surface, i.e., a printing surface of the paper, whereby a desired color image can be formed on the paper.

[0020]

The ink-jet printer 1 is provided with a maintenance unit 17 for automatically conducting the maintenance to the ink-jet heads 2. In the maintenance unit 17, four caps 16 for covering the four head main bodies 18 and a purge device (not shown) are installed.

[0021]

The maintenance unit 17 is positioned just below the

paper feed portion 11 (retracted position) when the printing is being conducted in the printer 1. When a predetermined condition is satisfied after the printing (e.g., when the printing is not conducted for a predetermined time period, or when the printer 1 is powered-off), the maintenance unit moves to a position immediately below the four head main bodies 18 where the cap 16 covers the lower face of the head main body 18 to thereby prevent ink at the nozzle of the head main body 18 from drying .

[0022]

The belt rollers 6 and 7, and the conveyor belt 8 are supported by a lift device, which includes an eccentric axis 14 and a cylinder member 15 rotating in accompaniment with the rotating movement of the eccentric axis. When the maintenance unit 17 moves between the retracted position and the cap position, the lift device is configured to drop the conveyor belt 8 and the belt rollers 6 and 7 from the position shown in Fig. 1 to a proper distance to thereby secure a space for movement of the maintenance unit 17.

[0023]

Two guide members 21 which support the conveyor belt 8 from the inner surface thereof by contacting the inner surface of the conveyor belt 8 on the upper path facing

the ink-jet heads 2, are disposed in a region enclosed by the conveyor belt 8. The guide members are substantially rectangular parallelepiped-shaped (and has the same width as the conveyor belt 8).

[0024]

The conveyor belt 8 has a two-layer structure formed by two sheets adhered each other. An inner sheet 8a is made of woven or non-woven fabric, and an outer sheet 8b is made of silicone rubber (see Fig. 3). Additionally, because part of the inner sheet 8a is not covered by the outer sheet 8b, a single recessed portion 24 that has a height that is the same as the thickness of the outer sheet 8b is disposed in the outer peripheral surface of the conveyor belt 8. Meanwhile, it should be noted that the timing at which the paper is conveyed in the ink-jet printer 1 is adjusted so that the paper is conveyed by the portion other than the recessed portion 24.

[0025]

Figs. 2, 3, and 4 are respectively the plan view, the sectional view, and the perspective view illustrating the state where the conveyor belt 8 is disposed at an upper side, i.e., a position where the recessed portion 24 faces the ink-jet head 2. As illustrated in Figs. 2 to 4, the recessed portion 24 is of a pentagonal shape having a width that is equal to the width of the conveyor belt 8

when seen in plan view. The recessed portion 24 has a stepped portion 24a at rear end in the traveling direction of the conveyor belt 8, the stepped portion 24a being "V" shaped, with an apex 24b, which is at the center of the belt in the belt width direction, is projected forward in the traveling direction. A stepped portion 24c formed at front end of the recessed portion 24 in the traveling direction of the conveyor belt 8 is of a straight linear shape along the belt width direction.

[0026]

The stepped portion 24a, as shown in Figs. 3 and 4, is recessed at its lower half portion contacting an inside sheet member 8a to form a groove 24d, so that it is shaped like an overhang with its upper half portion projected in the front of the traveling direction of the belt.

[0027]

The inside sheet member 8a exposed to the bottom face of the recessed portion 24 is coated with silicone or the like so that it is processed with a water-repellent treatment to thereby hardly absorb ink.

[0028]

Also, in the recessed portion 24, a distance L between the apex 24b and the stepped portion 24c is a distance that is somewhat longer than twice the width of a head main body 18. As will be described later, this is

because the distance is set so that the flushing of ink into the recessed portion 24 is conducted using two ink-jet heads 2 as a unit.

[0029]

As illustrated in Figs. 1 and 2, the ink absorbing members 23a and 23b (of which only 23a is illustrated in Fig. 1) having the substantially rectangular parallelepiped shape and made of felt is disposed at opposite sides in the belt width direction at a position near the roller 6.

[0030]

Due to a drive mechanism, it is possible for the ink absorbing members 23a and 23b to selectively assume either of a position at which it contacts the conveyor belt 8 and a position at which it does not contact the conveyor belt 8. The ink absorbing members 23a and 23b are disposed at a position where it comes into contact with the side of the belt 8 at a time when flushing is conducted, and a position where it does not come into contact with the belt 8 at a time other than the case.

[0031]

Next, the movement of ink flushed on the conveyor belt 8 will be described with reference to Fig. 5. Fig. 5 is an enlarged cross-sectional views of the vicinity of the recessed portion 24 at the center position in the belt

width-direction of the conveyor belt 8, shown in a temporal sequence accompanying the traveling of the conveyor belt 8. Fig. 5 shows the state when the recessed portion 24 is on the upper path of the conveyor belt 8.

[0032]

In order to conduct the flushing, first, as shown in Fig. 5A, the conveyor belt 8 is made to travel to a position at which the region between the apex 24c and the stepped portion 24b of the recessed portion 24 faces the two head main bodies 18 near the roller 7 of the four head main bodies 18. Then, after the traveling of the conveyor belt 8 is stopped, ink is ejected or flushed towards the recessed portion 24 of the conveyor belt 8 from all of the nozzles of these two head main bodies 18. Thus, the ejected ink 30 is disposed on the inner sheet 8a that is the bottom surface of the recessed portion 24.

[0033]

Thereafter, the conveyor belt 8 is made to travel so that the region between the apex 24b and the stepped portion 24c of the recessed portion 24 faces the two head main bodies 18 near the roller 6 of the four head main bodies 18. Then, as shown in Fig. 5B, after the traveling of the conveyor belt 8 is stopped, the ink is ejected or flushed towards the recessed portion 24 of the conveyor belt 8 from all of the nozzles of these two head main

bodies 18. Thus, the ejected ink 30 is disposed on the inner sheet 8a that is the bottom surface of the recessed portion 24. When the conveyor belt 8 is made to travel in this state, the ink 30 ejected from the two head main bodies 18 near the roller 7 of the four head main bodies 18 moves in the direction opposite to the traveling direction inside the recessed portion 24 due to inertia, and when the ink reaches the stepped portion 24a, it moves toward both ends of the conveyor belt 8 in the width-direction thereof along the groove 24d.

[0034]

When the conveyor belt 8 is made to travel after the ink ejection from the two head main bodies 18 near the belt roller 6 is stopped, as shown in Fig. 5C, the ink 30 retained on the inner sheet member 8a gradually moves opposite to the traveling direction of the belt 8 in the recessed portion 24, and when it reaches the stepped portion 24a, it moves towards both ends of the belt 8 in the width-direction thereof along the groove 24d. Thus, there is substantially no ink on the inner sheet member 8a exposed to the bottom portion of the recessed portion 24.

[0035]

Moreover, when the conveyor belt 8 is made to travel, as shown in Fig. 5D, a portion of the groove 24d corresponding to both ends of the belt 8 contacts the ink

absorbing members 23a and 23b. At this time, the conveyor belt 8 is stopped. Herein, traveling speed of the belt 8 and the position/size of the ink absorbing members 23a and 23b are set such that when the ink 30 moving through the groove 24d first reaches both ends of the belt 8, it already contact the ink absorbing members 23a and 23b. Then, the ink 3 is absorbed by the capillary force generated by the ink absorbing member 23a and 23b and discharged from the inside of the groove 24d. Thus, a series of flushing operations in the ink-jet printer 1 are terminated.

[0036]

Meanwhile, the belt conveying mechanism of the embodiment may further include a device for discharging the ink absorbed in the ink absorbing members 23a and 23b. In addition, even though the conveyor belt 8 is made to travel continuously without stopping it, the whole ink in the groove 24d can be discharged with the proper adjustment of traveling speed of the belt 8 and the position/size of the ink absorbing members 23a and 23b.

[0037]

As described above, although the ink-jet printer 1 using the belt conveying mechanism 13 of this embodiment is a line-type printer, ink is ejected towards the recessed portion 24 without retracting the conveyor belt 8

or the ink-jet heads 2, whereby rapid flushing becomes possible with a relatively simple configuration. Thus, manufacturing costs can be reduced, miniaturization of the ink-jet printer 1 is realized, and it also becomes possible to increase the printing rate per unit of time.

[0038]

Also, because unlikely the afore-mentioned patent documents 1 and 2, an opening for flushing is not formed and only the recessed portion 24 is disposed in the conveyor belt 8, there is little drop in the strength of the conveyor belt 8. Thus, a desired belt tension can be obtained, troubles do not arise in the paper conveying process, and there is virtually no reduction in the life of the conveyor belt 8.

[0039]

Moreover, the ink 30 flushed in the recessed portion 24 is rapidly absorbed by the ink absorbing members 23a and 23b disposed at both sides of the conveyor belt 8 via the groove 24d, whereby the ink 30 is rapidly removed from the outer surface of the conveyor belt 8. Thus, virtually no troubles arise during printing after flushing.

[0040]

Also, in this embodiment, there is no case where the ink 30 ejected into the recessed portion 24 of the belt 8 is retained on a location other than the ink absorbing

members 23a and 23b, for example, the inner face of the belt 8 or the belt rollers 6 and 7. Thus, belt slippage and transfer of ink to the paper can be held to a minimum.

[0041]

Moreover, as shown in Fig. 1, because the ink absorbing members 23a and 23b are disposed not at the space opposite to the conveying surface of the belt 8 that is occupied by the ink-jet head 2, but at the side space of the conveyor belt 8 having relatively large space, it is possible to design the printer 1 easily.

[0042]

Further, since the stepped portion 24a is shaped like an overhang with the upper half portion facing the front of the traveling direction of the belt, it is possible to diffuse the energy of the ink facing the stepped portion 24a in the groove 24d, whereby there is virtually no case where the flushed ink 30 overflows the stepped portion 24a and then the recessed portion 24.

[0043]

Also, because the recessed portion 24 is of a "V" shape with the apex 24b projecting forward in traveling direction, the ink 30 moves towards both sides of the belt 8 in accompaniment with the belt traveling. According to this, in comparison with the case where the ink 30 moves towards only one side of the belt 8 (which case will be

described in detail in a second embodiment), ink passage through the respective sides of the belt is reduced, so that there is little the case where the flushed ink 30 overflows from the recessed portion 24. Also, comparing the same case, when the distance L is kept constant, a distance between the portion of the groove 24d corresponding to the both sides of the belt 8 and the stepped portion 24c can be made short. That is, since the whole length of the recessed portion 24 can be made relatively short, it is easy to conduct paper conveying timing control.

[0044]

Also, it is possible for the ink absorbing member 23a and 23b to selectively assume either of a position at which it contacts the conveyor belt 8 and a position at which it does not contact the conveyor belt 8, so that it is possible to minimize the friction between the conveyor belt 8 and ink absorbing member 23a and 23b by contacting the ink absorbing member 23a and 23b only during flushing operation. Also, because it is possible to reduce the ink that has seeped into the ink absorber 27 from adhering to the conveyor belt 8, there is the advantage that belt slippage and transfer of ink to the paper can be suppressed.

[0045]

Next, a second embodiment of the invention will be described with reference to Figs. 6 and 7. Figs. 6 and 7 respectively are the plan view and the sectional view of the conveyor belt when the recessed portion of the belt is disposed on the upper path. Meanwhile, in the present embodiment, the portions other than those illustrated in Figs. 6 and 7 are constructed identically to those of the first embodiment, and the same reference numerals will be given to elements that are the same as those in the first embodiment, and detailed description of those elements will be omitted.

[0046]

As shown in Figs. 6 and 7, the recessed portion 34 is a trapezoid having a width that is equal to the belt width when seen in plan view. Additionally, a stepped portion 34a formed at the rear end of the recess portion 34 in a traveling direction has a linear shape slanted by about 20° with respect to the belt width direction. And a stepped portion 34c formed at the front end of the recess portion 34 in the belt traveling direction has a linear shape along the belt width direction.

[0047]

As shown in Figs. 6 and 7, the stepped portion 34a is slanted from inward and upward end to outward and downward end of the recessed portion 34 so as to form an

angle of about 45°. In other words, the stepped portion 134a has an overhanging form whose upper end faces the front of the traveling direction, and the space below the stepped portion 34a forms a groove 34d.

[0048]

The inside sheet member 8a exposed to the bottom face of the recessed portion 34 is coated with silicone or the like so that it is processed with a water-repellent treatment to thereby hardly absorb ink.

[0049]

Also, in the recessed portion 34, a distance L between front end of the stepped portion 34a in the belt traveling direction and the stepped portion 34c is a distance that is somewhat longer than twice the width of a head main body 18. This is because the distance is set so that the flushing of ink into the recessed portion 34 is conducted using two ink-jet heads 2 as a unit.

[0050]

The ink absorbing member 23a having the substantially rectangular parallelepiped shape and made of felt is disposed at one side (the side corresponding to the rear end of the belt in the belt traveling direction) of the conveyor belt 8 in the width direction at a position near the roller 6.

[0051]

Due to a drive mechanism, it is possible for the ink absorbing member 23a to selectively assume either of a position at which it contacts the conveyor belt 8 and a position at which it does not contact the conveyor belt 8. The ink absorbing member 23a is disposed at a position where it comes into contact with the side of the belt 8 at a time when flushing is conducted, and a position where it does not come into contact with the belt at a time other than the case.

[0052]

The flushing operation of the present embodiment is conducted substantially identical to that of the first embodiment, excluding that since the stepped portion 34a is shaped like afore-mentioned form, ink moves towards only one side of the belt 8 corresponding to the rear end of the belt traveling direction of the stepped portion 34a in accompaniment with the belt conveying, and the ink is absorbed in the ink absorbing member 23a therefrom. In this case, the amount of ink moved to one side of the belt 8 corresponding to the rear end of the belt 8 in the belt traveling direction becomes twice as much as that of the first embodiment.

[0053]

Since in the present embodiment, the stepped portion 34a is shaped like an overhang with the upper portion

facing the front of the belt traveling direction, like the first embodiment, it is possible to diffuse the energy of the ink facing the stepped portion 34a in the groove 34d, whereby there is virtually no case where the flushed ink 30 overflows the stepped portion 34a and then the recessed portion 34. According to the present embodiment, beside obtaining the same effect as the first embodiment, there is an advantage in that the configuration of the apparatus including the drive unit becomes simplified because only a single ink absorbing member 23a may be arranged.

[0054]

While the proper embodiments have been described, the present invention does not limited thereto, and may be diversely changed within the scope of the claims. For example, although in the afore-mentioned embodiment, the stepped portion 24a and 34a in the downstream of the belt traveling direction has the "V" shape or a shape of a single straight line, the shape may be of other shapes if it allows the ink to move to at least one side.

[0055]

In addition, the ink absorbing member 23a and 23b or the inner sheet member 8a may be made of a material other than the felt or the woven or non-woven fabric. Moreover, the conveyor belt 8 is not necessarily of two-layered structure, and for example is of three or more-layered

structure or a single-layered structure. Also, the stepped portion 24a and 34a is not necessarily shaped like an overhang facing front in the belt traveling direction. In case where the stepped portion 24a and 34a is shaped like an overhang, the shape is not limited to that shown in the drawings, but may be of arbitrary ones.

[0056]

It is possible to fix the ink absorbing member 23a and 23b to the side of the belt 8 as to contact it, instead of being movable. Moreover, it is possible to change the distance L between the front end of the stepped portion 24a and 34a in the belt traveling direction and the stepped portion 24c, so that for example, the distances are somewhat longer than the width of a head main body 18 or four times the width of a head main body 18. In this case, the unit of the head main bodies 18 conducting flushing may be changed.

[0057]

The length of the ink absorbing member 23a and 23b along the belt traveling direction can be arbitrarily changeable within a range in which ink can be sufficiently absorbed. Further, the invention is applicable not only to a line-type ink-jet printer but also to a serial-type ink-jet printer.

[0058]

[Effects of the invention]

According to the above configuration, rapid flushing becomes possible with a relatively simple configuration by ejecting ink towards the recessed portion without retracting the conveyor belt or the heads. Also, a drop in the strength of the conveyor belt can be reduced because the conveyor belt has no opening formed therein. Further, the ink flushed in the recessed portion can be removed from an outer circumferential face of the belt effectively in accompaniment with the traveling of the belt.

[Brief Description of the Drawings]

[FIG. 1]

It is a schematic view showing an ink-jet printer provided with a belt conveying mechanism in accordance with a first embodiment of the invention.

[FIG. 2]

It is a plan view of a conveyor belt shown in Fig. 1.

[FIG. 3]

It is a partial cross-sectional view of a conveyor belt shown in Fig. 1.

[FIG. 4]

It is a partial perspective view of the conveyor belt shown in Fig. 1;

[FIG. 5]

It is an enlarged cross-sectional view of the vicinity of a recessed portion at a belt width-direction center position of the conveyor belt, shown in a temporal sequence accompanying the traveling of the conveyor belt.

[FIG. 6]

It is a plan view showing a conveyor belt included in an ink-jet printer provided with a belt conveying mechanism in accordance with a second embodiment of the invention.

[FIG. 7]

It is a partial cross-sectional view of a conveyor belt shown in Fig. 6.

[Description of Reference Numerals and Signs]

1 Ink-jet Printer

2 Ink-jet Head

5 Paper Feed Roller

6,7 Belt Roller

8 Conveyor Belt

8a Inner Sheet member

8b Outer Sheet Member

18 Head Main Body

21 Guide Member

23a,23b Ink Absorbing Member

24 Recessed Portion

24a Stepped Portion

24b Apex

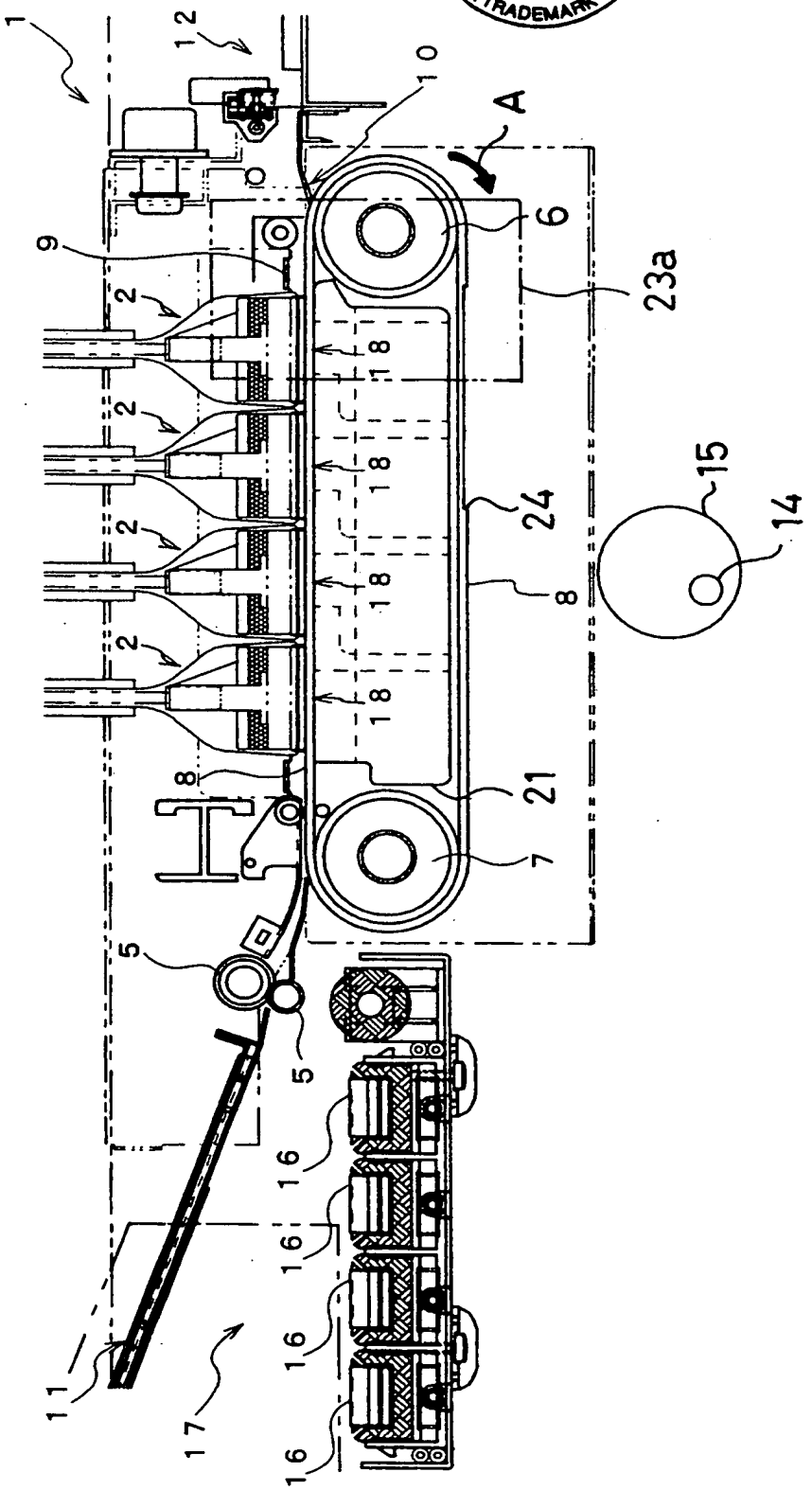
24c Stepped Portion

24d Groove

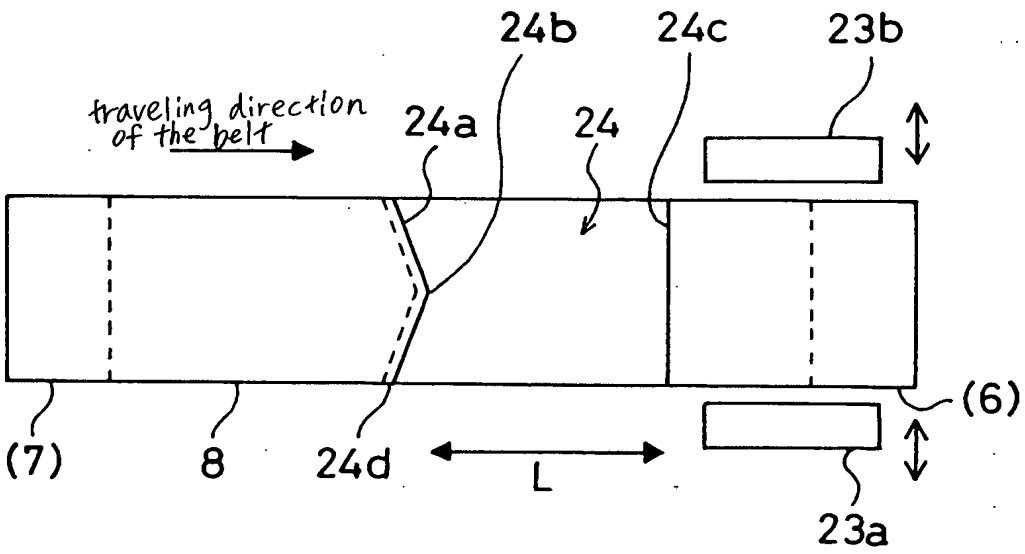
30 Ink

[Name of Document] DRAWINGS

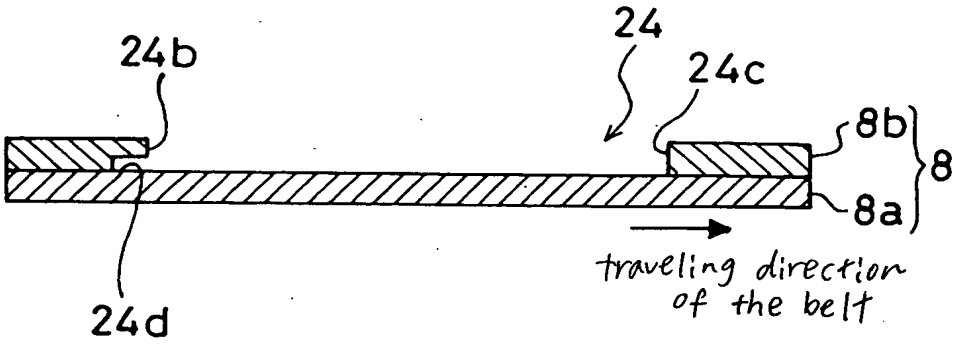
[Fig. 1]



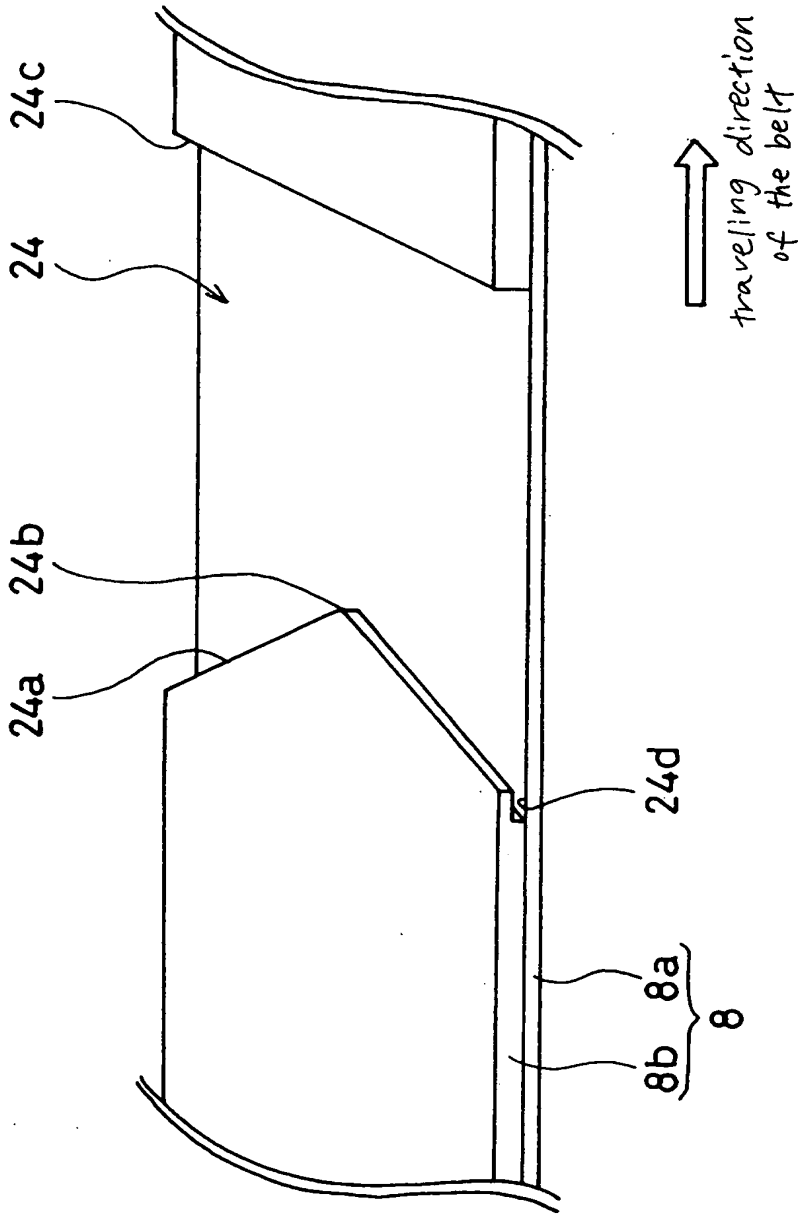
[Fig. 2]


24b
24c
23b
traveling direction of the belt
24a
24
(6)
(7)
8
24d
L
23a

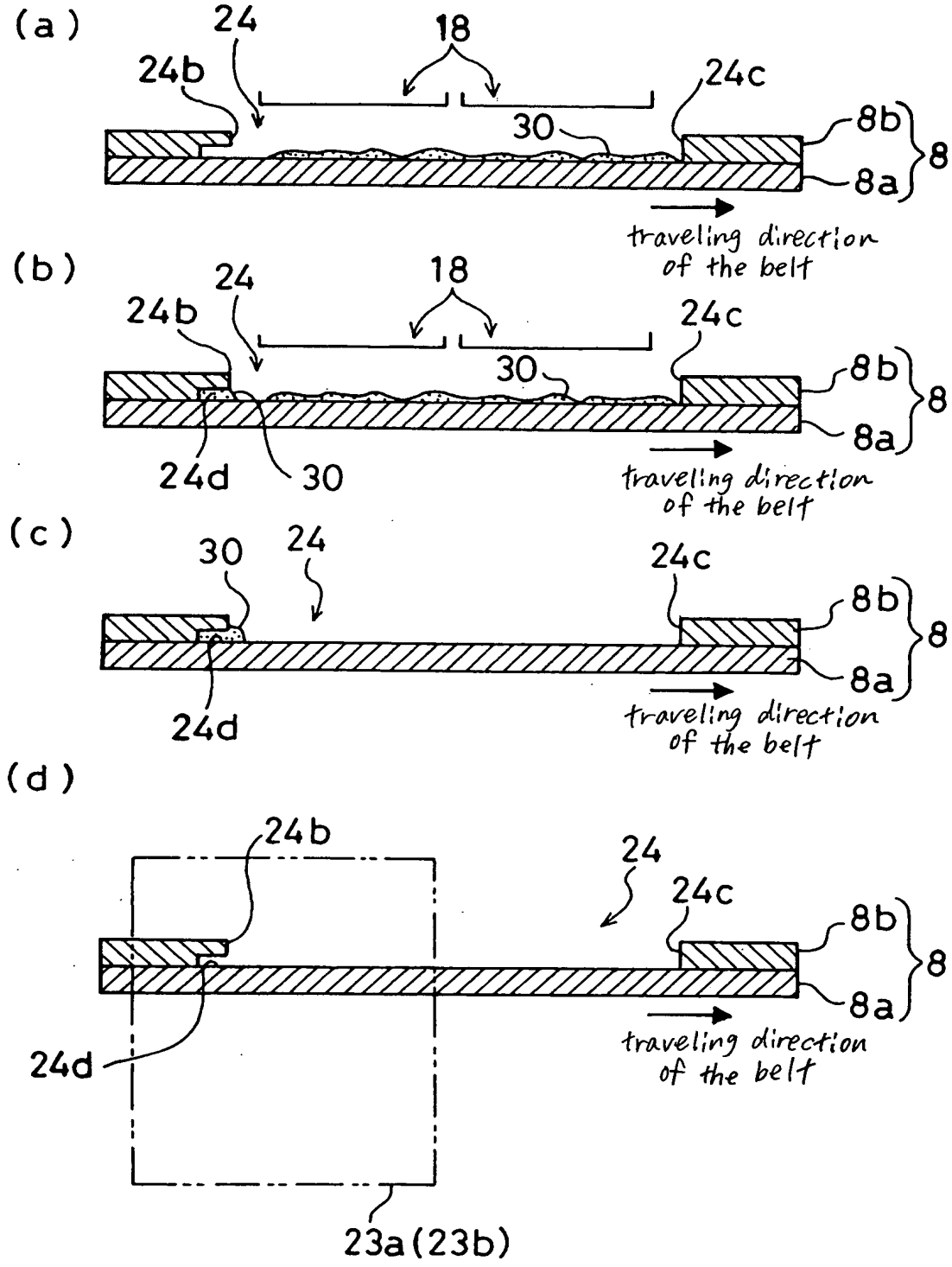
[Fig. 3]


24
24b
24c
8b
8
8a
traveling direction of the belt
24d

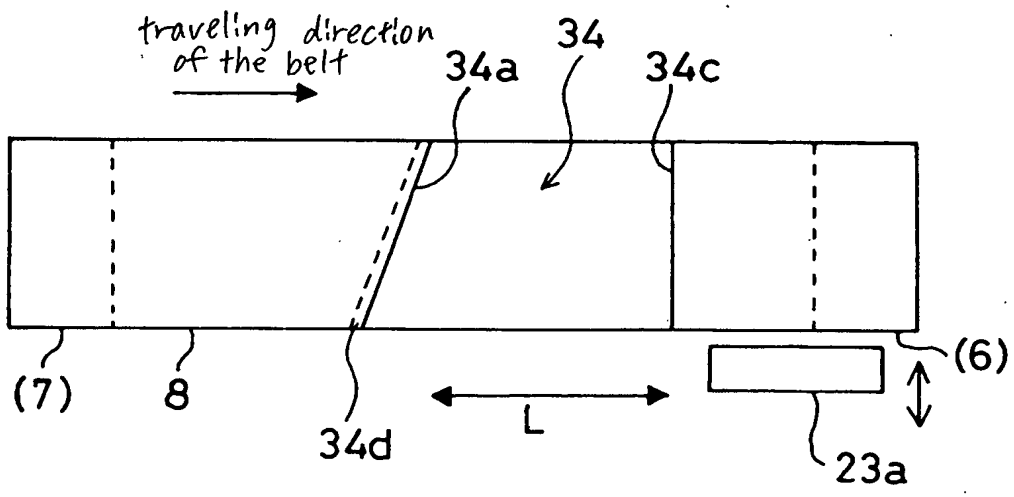
[Fig. 4]



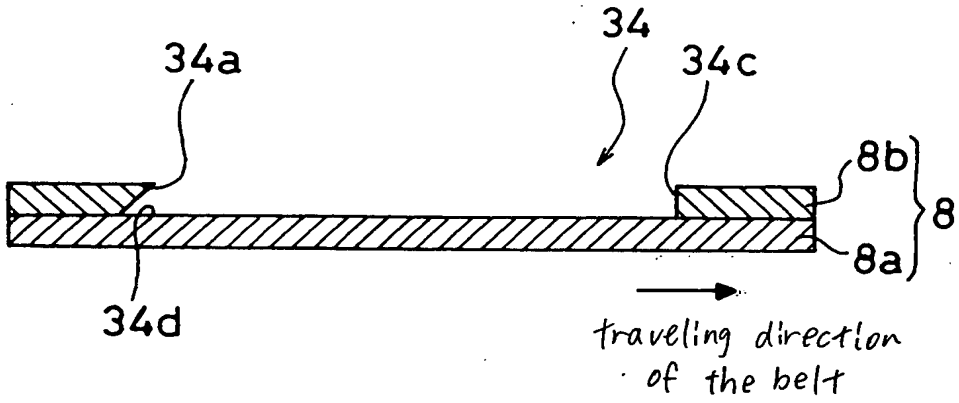
[Fig. 5]


(a)
24
18
24b
24c
30
8b
8
8a
traveling direction of the belt
(b)
24
18
24b
24c
30
8b
8
8a
24d
30
traveling direction of the belt
(c)
30
24
24c
8b
8
8a
24d
traveling direction of the belt
(d)
24b
24
24c
8b
8
8a
24d
traveling direction of the belt
23a(23b)

[Fig. 6]


traveling direction of the belt
34
34a
34c
(7)
8
34d
L
(6)
23a

[Fig. 7]


34
34a
34c
8b
8
8a
34d
traveling direction of the belt

[Destination of Document] ABSTRACT

[Abstract]

[Problem] To enable rapid flushing and reduce drop in strength of the conveyor belt with a relatively simple construction.

[Means for Resolution] The surface of the conveyor belt 8 is formed with a recessed portion 24. The stepped portion 24a formed at the rear end of the recessed portion 24 in the traveling direction of the conveyor belt 8 has a "V" shape whose center portion in the belt width direction, forming an apex 24b, projects forward in the traveling direction. On both sides of the conveyor belt, ink absorbing member 23a and 23b are disposed . When the conveyor belt 8 is made to travel after the ink is ejected into the recessed portion 24, the ink inside the recessed portion 24 moves in the direction opposite to the traveling direction due to inertia, and when the ink reaches the stepped portion 24a, it moves toward both sides of the conveyor belt 8 along the groove 24d. The ink is then absorbed in the ink absorbing member 23a and 23b from the both sides of the conveyor belt 8.

[Selected Figure] Fig. 2